The History of the Entomological Clap-net in Great Britain

By Dr. Ronald S. Wilkinson*

The bag-net, which in its various forms is one of our most familiar items of collecting equipment, was a Continental rather than a British innovation. Such a design may have been introduced to naturalists in Britain through a collaboration between James Petiver and Eleazar Albin in 1711, after Petiver's return from a visit to the Netherlands (Wilkinson, 1966a, 1968). It seems remarkable that no specific references to nets have been discovered in Britain before this instrument, which Petiver called his "Muscipula" or "fly-catcher", especially considering the fact that such naturalists as John Ray and Samuel Dale collected flying insects on such a wide scale, and must have used some sort of net. Indeed, Petiver had been collecting Lepidoptera and other orders for over 15 years before he discovered the virtues of the "Muscipula". Certainly these men had more sophisticated equipment than that of the Elizabethan naturalists Thomas Moffet and Thomas Penny, who, when their party was collecting in an Essex wood, were forced to defend themselves from wasps by the means of branches of the broom-plant which were being used to capture insects: "in manibus genistæ aliquot ramos (quibus insecta comprehendere soliti fuimus) in tulelam & defensionem nostram portassemus. . . . " (Moffet, 1634). Yet, in well over a decade of inquiry, I have been unable to establish the precise net design used by Ray and his British contemporaries in the 17th century.

The "Muscipula", which we might now assume to have been the bag-net, did not fare well in Britain, despite Petiver's efforts to promote it among all manner of persons urged to collect insects for his noted cabinet. Benjamin Wilkes did not mention the Continental bag-net at all in his broadside of collecting directions printed in 1742, or in his more extensive colour-plate work, *The English Moths and Butterflies* [1747 or 1748?-49]. By the seventeen-forties, the curious device known as the *clap-net* had become the instrument used in England for capturing insects on the wing. The clap-net, which was obviously adapted for entomological purposes from the common fowling-net used to take birds, is best visualised from an illustration, and one is given in a past issue of the *Record* (Wilkinson, 1966b).[1]

The first British description seems to have been that in Wilkes' 1742 broadside: "Provide a Net made of Muscheto Gause, and in Shape like a Bat-folding Net [the fowling-net], let its Length be one Ell [about 45 inches], the Width at

* The Library of Congress, Washington, D.C. 20540; The American Museum of Natural History, New York, New York 10024.

[1] The illustration of the clap-net there shown, was reproduced by permission of Mr. J. M. Chalmers-Hunt, from the frontispiece of his copy of the exceedingly rare anonymous *History of Insects* (London, 1839). — R.S.W.

Bottom three Quarters of a Yard, at Top half a Yard, and cut circular; this must be sew'd to a Tape or Ferret, that it may be fasten'd to a couple of Hasle or other Sticks five Feet long each, the upper Part whereof should be Circular to fit your Net". In plainer language, the 18th century clap-net was constructed of two wooden rods, curved (and usually jointed) to meet at their upper ends. An ample gauze net was fitted between the rods. The entomologist held the free end of one rod in each hand, "clapping" the device together when a stroke had placed the insect against the net, thus securing it. The various details of using the clap-net were best explained by Moses Harris in *The Aurelian* ([1758]-66). If there had been any previous questions about the effectiveness of this method of capturing insects, Harris' influential book dispelled them, while setting the mode of entomological collecting in Britain (at least in the case of the Lepidoptera) for nearly a century. (Harris indicated that clap-nets could be purchased "at the Fishing-Tackle Shops, by asking for them; they call them Butterfly Traps" — an early observation of entomological equipment for sale in Great Britain.)

Moses Harris did mention the bag-net as an aid for taking flying insects, but only in a very specialised way. He described a curious variant, apparently the first of the British "long nets" for the Purple Emperor, *Apatura iris* (L.). It was a fifteen-foot affair, "The Mouth of which, when you have covered the Fly, is drawn together by a String, as a Purse is" (Harris, [1758]-66). Harris' "purse-net" has interesting affinities to a net used by the great French entomologist R. A. F. de Réaumur (Wilkinson, 1967), and may have been derived from that design. Harris' aquatic net was obviously a bag-net, but this was only a continuation of a long tradition derived from anglers. The clap-net reigned triumphant as a general field design in *The Aurelian.*

The net derived from fowling was that mentioned in the standard guide to collecting methods following Harris, William Curtis' *Instructions for Collecting and Preserving Insects* (1771). Similarly, Adrian Hardy Haworth used the clap-net for general purposes, although he at least mentioned the bag-net, again to be used in taking the adult Purple Emperor (Haworth, 1803), and now grown to "twenty or thirty feet long". Now and then conjectures have been published as to whether these bag-nets of enormous length were really effective, or indeed useful at all, but it is certain that one of *over* thirty feet in length was employed relatively recently by Mr. I. R. P. Heslop; it was described and illustrated in *Notes & Views of the Purple Emperor* (1964).

In his little guide which was an important source for a number of years, Abel Ingpen (1827) asserted that "A Clap Net . . . is the first instrument in point of importance". At least Ingpen brought the bag-net back down to earth; his "ring-net", however, was only three or four inches in diameter, and was used for placing over resting moths, not for taking flying insects. In the fourth volume of their very influential

Introduction to Entomology (1826), Kirby and Spence noted that "scarcely any implement seems a greater favourite with British collectors than what may be called the *fly-net.* This is universally employed by them for capturing *flying insects,* especially *Lepidoptera*". This was the clap-net, and its design had by this time become greatly refined; the better-made nets could be taken to pieces and reduced to a small compass, not only for ease in transport but also for concealment in an age when, as Kirby and Spence observed, the entomologist with his implements would be "stared and grinned at by the vulgar". This 1826 volume may have, at the same time, called the attention of many British entomologists to the Continental use of the bag-net; Kirby and Spence stated that the French collectors used it to "catch *Lepidoptera* and other *flying* insects; and an adroit collector by giving it a certain twist completely closes the mouth, so as to prevent the escape of his captives". The very modern statement would seem to have been argument enough for the introduction of the bag-net as a general implement, but this was not so; the authors actually recommended the bag-net only for capturing *iris* and for sweeping; it was "not deep enough for *flying* insects" — a supposed difficulty which could easily enough have been remedied, one would imagine.

In his *A Familiar Introduction to the History of Insects* (1841), Edward Newman, one of the arbiters of Victorian entomology, mentioned the bag-net only as a device for sweeping and aquatic collecting; the clap-net was described as "the grand weapon of the entomologist". Newman explained that this net "is the best for pursuing butterflies and moths on the wing; the hunter tries to get the net under the object, and strikes upwards, closing the rods at the same time". But was it really "the best"? Newman's dictum was soon quite decisively disputed, and the twenty years after 1840 saw the extensive introduction of the Continental bag-net into England as a replacement of the clap-net. The standard guide-books of the new generation indicate that the basic instrument of aurelians from Wilkes to Newman had been decidedly overwhelmed by its Gallic and Germanic rival.

The new handbooks were *The Insect Hunter's Companion* (1863), by the pupa-digging parson Joseph Greene, and *The Lepidopterist's Guide* (1869), written by the editor of the *Entomologist's Monthly Magazine,* H. Guard Knaggs. And what a difference! Greene wrote in 1863 that "there are, I believe, two kinds of net commonly employed. . . . The one consists of a hoop or ring of iron (sometimes cane), about three feet in circumference. . . . The *larger* it is, the better chance of entrapping the insect; the *smaller,* the more easy to wield. To this ring is attached a bag-net, about two-and-a-half feet in depth, made of green gauze". Of the clap-net, Greene stated that "as I am not familiar with either the make or use of it, I shall quote the description given of it by Mr. Newman, in his 'Familiar Introduction to the History of Insects' ". Greene preferred the bag-net, "probably for the

simple reason that I have always used it, and have become accustomed to it". In 1869, Knaggs was even less equivocal: "that now most commonly in use is a light ring net, the steel ring being jointed for the convenience of folding up into a small space. . . . The *clap-net* . . . seems to have quite gone out of fashion".

Out of fashion, but not out of use. Despite the fact that the Continental bag-net had finally been accepted, the clap-net managed to hold some ground for at least three more decades. During a search for late survivals of the clap-net, the last really significant printed reference I have found is one written by the founder of the *Record,* J. W. Tutt, who provided evidence that the clap-net still had a limited use in 1895. In the chapter on apparatus and methods in his *British Moths* (1896), Tutt observed that nets "are made in a variety of ways, but the clumsy old clap-net has given way *almost entirely now* to the ring-net". (The italics are mine.) The *British Moths* was written as a guide to inexperienced lepidopterists, and those who are familiar with Tutt's ideas know the importance he placed on proper instruction of the young. He would not have thought it necessary to mention the clap-net in such a way if he had not known that some of his contemporaries were still using it. And, his inference is confirmed by a turn-of-the-century photograph reproduced by R. L. E. Ford in his *Practical Entomology* (1963). The illustration shows a group of collectors from the end of Queen Victoria's reign, posing with a clap-net which appears identical to the design described by Newman in 1841.

But how long did the clap-net actually survive in Great Britain? Although numerous examples of Victorian and Edwardian entomological equipment can be found in various collections, as well as some items obviously from the 18th century, not a single genuine clap-net has ever been discovered by the author or Mr. J. M. Chalmers-Hunt, and both of us have been searching for one for many years. Oral tradition has also failed; none of the older entomologists I have interviewed specifically recall the clap-net in use. For example, the late P. B. M. Allan began his collecting activities in the 1890s, but never saw a clap-net, although after much later study he had no doubt that the design was probably still in use during his youth.

Another question which remains unanswered is why such a net survived at all. When a seemingly more efficient design had been in use on the Continent since at least the 17th century, why was the clap-net accepted in Great Britain, and why did so many generations of British entomologists use that design, until the bag-net finally won the field in the Victorian era? The literature gives us few hints toward a solution, but a conversation I had with P. B. M. Allan many years ago led us both to what may be an explanation. Despite the innovations of Petiver, we might suppose that British aurelians adapted the fowling-net to entomological purposes quite independently of the efforts of their Continental contem-

poraries. Mr. Allan suggested that because of the widespread use of the fowling-net to capture birds in the 17th century, the clap-net may have been well established before Petiver's apparent (and at any rate unsuccessful) introduction of the bag-net in 1711. Of course that is conjecture, but history shows us many examples of the fact that entomological techniques well learned are not easily discarded.

A personal experiment has demonstrated why this may well have been the case in the matter of the clap-net. Had 18th-century British entomologists become so adept in the use of their own design that there was simply no incentive to abandon it in favour of a Continental innovation? We have perhaps been misled by frequent descriptions of the clap-net as "clumsy". In 1972, acting somewhat belatedly upon a suggestion made by Mr. Allan, I constructed a very rudimentary clap-net using aluminium tubing and mosquito netting. That summer I repaired to the field on a number of occasions with my clap-net, and despite the habit of over thirty years of wielding a bag-net, I was soon able to perform with reasonable skill. Using Moses Harris' directions for aerial work, I found that except in headlong chase and in "close quarters", it was very simple to take insects on the wing. Moreover, the great area of the clap-net gave me a marvellous sweeping capacity, and in picking insects off plants, the "clapping" facility of the old design was much superior to the bag-net. My clap-net was surprisingly useful in taking insects resting on the ground, and as might be expected, it was very capable in the task of beating from trees and shrubs. After a few weeks' use, I could not help but admit that a field collector raised entirely in the use of the clap-net would consider it an ideal all-round instrument. In fact, for a great many entomological purposes, the clap-net was an eminently useful design, although it must have been apparent to those who were finally tempted to try the bag-net that the European design was really more successful in the capture of flying insects, and because of its smaller size could be used with more utility in situations which called for a less bulky instrument. Thus the clap-net, as Knaggs phrased it, eventually passed "out of fashion", but its history is a reminder of the adage that old methods were not necessarily useless ones.

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A Different Kind of Butterfly Catcher. — A friend knowing my interest in butterflies has passed me a copy of an article appearing in the 8th January, 1978 issue of *Free China Weekly,* from which the following is an extract:

"Shih Tien-ting, a native of Chaochow, Pingtung, is a different kind of butterfly catcher. Instead of chasing after butterflies, they come to him. It is therefore not surprising that Shih has caught the largest number of butterflies in Taiwan in the past 30 years as a professional catcher with a personal record of 120,000 in a single day. Shih estimates he catches about 1 million to 2 million butterflies caught in Taiwan. He declines to reveal the secret of his success, however. Shih usually sells his catch to Yu Wen-chung, who owns the largest butterfly processing plant in the world, with an annual capacity of 10 million specimens. Shih said he is careful to release rare specimens and female butterflies of all species."

The idea of a butterfly processing plant sounds appalling — and presumably there are more than just the one referred to in the article. Can the butterfly population withstand depredation on such a gigantic scale? — G. G. Baldwin, 22 Edgerton Grove Road, Huddersfield, HD1 5QX.

Cerura vinula L. Cocoon on Wall. — In late July 1977 I found two larvae of *Cerura vinula* L. on the willow tree in our front garden. One larva was removed, but the other was left on the foliage. In late August I searched for the cocoon on the willow, but without success. In the autumn I found the cocoon on the brick wall surrounding our back garden. It was situated eight centimetres from the top edge of the wall, and placed facing north on a vertical band of mortar between two red bricks. The sides of the cocoon overlap the nearest edges of the two bricks. The larva used the mortar between the bricks to make its cocoon. The cocoon though protuberant is well camouflaged in colour. — A. H. Dobson, 1 Halden Close, Romsey, Hants.